

## ON THE VERTICAL RANGE OF BIRDS IN COLORADO.

BY FRANK M. DREW.

COLORADO, lying between  $37^{\circ}$  and  $41^{\circ}$  north latitude and  $102^{\circ}$  and  $107^{\circ}$  west longitude, is preëminently a mountain state. Of its 104,500 square miles fully one-half is mountainous, the average elevation of the State being 6000 feet, with extremes of 3500 and 14,500 feet. Rising slowly from the Missouri River, the treeless plains, having already reached an altitude of 3500 feet at the eastern border of the State, thence continue to rise more rapidly, but yet gradually, to nearly half way across the State. There, at an elevation of about 6000 feet, the outlying foothills throw up a dam stretching north and south the full length of the State. Up into these foothills surge the waves of bird migration in spring to about 8000 feet — the altitude of the Great Parks which stretch their huge treeless surfaces atop the hills. And down these hills comes the return tide of birds in fall, a few to linger near the base, but by far the greater part passing on and down to an altitude lower than any found within the State.

Despite its latitude, which causes very hot summers, the average temperature is below that of other States in corresponding parallels. At an elevation of about 7000 feet, an approximate average for the year gives a temperature of  $+47^{\circ}$  F.; for winter — December, January, February — of  $+26^{\circ}$ ; spring — March, April, May — of  $+47^{\circ}$ ; summer — June, July, August — of  $+69^{\circ}$ ; autumn — September, October, November, — of  $+46^{\circ}$ . Missouri, in nearly the same latitude, has an approximate mean annual temperature of  $+55^{\circ}$ .

The average temperature on the higher peaks, reaching up to from 12,000 to 14,000 feet, usually ranges from  $20^{\circ}$  to  $30^{\circ}$  lower than these figures, the difference being greatest in summer. Continued observations at several stations give an average of about  $+48^{\circ}$  for the mean annual temperature at 6000 feet, and of  $+38^{\circ}$  at 10,000 feet elevation. Timber-line, which varies from 11,000 feet to 12,000 feet, has an average annual temperature — according to Gannet — of  $+30^{\circ}$ . Notwithstanding the heavy and long-continued snows of winter, and the frequent rains in summer,

the mean annual precipitation will not exceed 20 inches,—being 12 to 14 inches on the plains, and increasing to 32 inches in the mountains.

As is well known, the flora of the plains is strongly characterized by buffalo grass, sun flowers, and cacti, and as a natural result, Fringillidæ and Raptores predominate there over all other forms of bird life.

Entering the foothills, which reach an average elevation of 8000 feet, the piñon (*Pinus edulis*) and dwarf oak (*Quercus alba gunnisoni*) at once become abundant, and their matted clumps and tangled underbrush make hiding places for many Warblers. On the shoulders of the foothills rest the mountain parks, with a mean elevation of 8000 feet. They are treeless and plain-like, being covered with grass and sage, save where the grass has been killed out by grazing herds; then the shifting sands prevent aught but sage from maintaining a foothold.

The bases of the main peaks have an elevation of about 8000 feet; thence they rise rapidly, drawing themselves aloof from the life of the plains. And, indeed, it is only those birds which pass up into these uppermost levels which can properly be called mountain inhabitants, the great parks thus forming the real dividing ground between the summer camps of the hardier lowland birds and the homes of those to the manor born. Nor do the straggling migrants but rarely wander over the mountains themselves, but, instead, into these parks.

The latitudinal range of birds in the United States has been quite fully worked out, and notes on the close connection between vertical and geographical distribution are not few: yet, so far as I know, no one has tabulated the vertical range. References to elevations at which birds have been found in summer are quite frequent. Especially is this the case in Allen's 'Ornithological Reconnoissance in Kansas,' etc., and Ridgway's 'Ornithology of the 40th Parallel,' and many are given by Mr. T. M. Trippe in Coues's 'Birds of the Northwest.' I have freely borrowed from these sources, as well as from Henshaw's 'Report' on birds in volume V of Wheeler's Surveys, and from Ridgway's paper on Colorado Birds in 'Bull. Essex Inst.', Vol. V, No. 11.

One working in different parts of the State will soon perceive the floral limits to be quite sharply defined. To a certain, though less extent, the birds also are shut in by almost intangible barriers.

But so evident is it that food supply is the main factor in bird distribution—this regulated by vegetation, and this in turn by climatic influences—that it only needs be said that where food is, there the birds will be found: as, *e. g.*, Creepers and Woodpeckers at 11,000 feet in winter, and Ouzels at the same season feeding in the icy torrents as high as 9000 feet.

Most birds range high up in summer and lower in fall; some have a range the reverse of this; while others early reach their nesting-sites and remain until the time for the complete semi-annual migration comes round.

Mr. T. M. Trippe, in 'Birds of the North-West,' p. 228, has noted the over-migration in spring of *Oreoscoptes montanus*. This trait is common to many, if not all, birds in vertical migration, though I believe not in latitudinal movements. Another peculiarity of vertical migration is the upward range of many birds during the Indian summer days of autumn, *e. g.*, *Sturnella neglecta*, *Scolecophagus cyanocephalus*, *Gymnocitta cyanocephala*. This I believe to be the result of a scarcity of food at lower levels, though a somewhat similar reverse migration has been noted at the same season on the New England coast. (See B. N. O. C., Oct., 1880, p. 237, and Coues, B. N. W., p. 521.)

The following list, containing the results of five years' work in the State, is believed to be a complete one of the birds found within the boundaries of Colorado. To the south, in New Mexico, climate, and to the north lower average elevation of the mountains, causes considerable variation in the vertical range of birds. But in Colorado, I think, this range is nearly uniform, there being but few birds of the list not of general distribution in the State, and these are chiefly found in the southern portion. Mountain ridges *en échelon* combine to catch many a straggling bird. Several such are entered on but a single record, and while showing nothing of distribution, yet may be of interest in future work. Some of those accredited on scanty data are followed by the name of the authority. In the parks are found the only apologies for lakes which the State affords, and around them the few Water Birds which remain during the summer cluster to breed. In many of the upper valleys beaver streams often provide suitable homes for isolated pairs of Ducks, but by far the greater number of our Water Birds are migrants.

No claim of completeness is made, the notes being offered as a basis on which to engraft other observations, and which,

with further notes on temperature and the flora, may eventually serve to show to what extent there is a correspondence between vertical and latitudinal distribution. As most of the birds noted are summer visitants, the column showing winter range is mostly blank. The upper nesting limit is usually easily determined; the lower not so readily, as many species, in suitable localities, nest down to sea-level. But in some cases, as in *Lagopus leucurus*, *Regulus calendula*, and some others, quite well-defined limits exist, above or below which few, if any, of these birds are found during the nesting season.

*Lophortyx californianus*, *Ortyx virginianus*, and perhaps some others, have been introduced in the vicinity of Denver, but probably as yet their range does not extend above 5000 feet.

The figures in the column under the headings, 'Spring,' 'Summer,' etc., refer to elevations in feet above sea-level. The 'Breeding Range' will give the full summer distribution of those remaining through that season. In the records of spring and fall migrants I have aimed to show how *high* the birds wander, and so have merely noted the upper limit of the range of birds which are generally distributed below the altitude given. But in the case of birds of erratic or little-known distribution, both the upper and lower levels inclosing their range are given. A ? following the figures in a few cases means probability amounting almost to certainty. The 'Plains' include a large part of adjoining Kansas.

The nomenclature is that of Ridgway's 'Catalogue of the Birds of North America.' But if sub-species '*montana*' is merely a modified form of *Certhia familiaris rufa*, why not put it so, and let it be understood that the last-named form is merely a modification of the preceding, as is now so well accepted in the case of varieties of the first remove? The same applies to *Pipilo maculatus arcticus megalonyx*.

Upper Limit of range in— Breeds—

	Spring	Summer	Autumn	Winter	from	to	
1. <i>Hyalocichla fuscescens salicicola</i>		8000				8000	
2. <i>Hyalocichla ustulata swainsoni</i>	6000	11000	9200		Plains	11000?	
3. <i>Hyalocichla unalashkæ auduboni</i>	9500	11500	10000		5000	11500	
4. <i>Merula migratoria propinqua</i>	10000	11500	13000		Plains	11500	
5. <i>Oreoscoptes montanus</i>	6000	9500	9500		"	9500	
6. <i>Mimus polyglottus</i>	6000	8000	5000		"	8000	
7. <i>Galeoscoptes carolinensis</i>	9200	8000			"	8000	
8. <i>Harporhynchus rufus</i>	7500	7500			"	7500	
9. <i>H. cinereus bendirei (Brewst.)</i>	9000						
10. <i>Cinclus mexicanus</i>	10000	11500	10000	9-6000	5000	10000	
11. " <i>Saxicola œnanthe</i> " ( <i>Minot</i> )	5500						
12. <i>Sialia sialis</i>		5500					
13. <i>Sialia mexicana</i>	9000	7500			5000	7500	
14. <i>Sialia arctica</i>	6-10000	11500	13000		5000	11500	
15. <i>Myiadestes townsendi</i>	9500	11500	10-9000		8000	10000	
16. <i>Polioptila cerulea</i>		7000			5000	7000	
17. <i>Regulus calendula</i>	7000	11500	10000		7000	11000	
18. <i>Regulus satrapa</i>	6000	11000	10000		9000?	11000	
19. <i>Lophophanes inornatus griseus</i>	5000		9200	5000	5000		
20. <i>Parus montanus</i>	6-9500	11500	13500	5-9000	8000	11500	
21. <i>Parus atricapillus septentrionalis</i>	8000	11000	11000	2-8000	Plains	10000	
22. <i>Psaltriparus plumbeus</i>				6500	"	7000	
23. <i>Sitta carolinensis aculeata</i>	6000	11000			5000	11000?	
24. <i>Sitta canadensis</i>		8000			5000	8000	
25. <i>Sitta pygmaea</i>		10000			6000	10000	
26. <i>Certhia familiaris rufa montana</i>		Ranges to timber line the year round					11500
27. <i>Salpinctes obsoletus</i>	6000	12000	13000		Plains	12000	
28. <i>Cathartes mexicanus conspersus</i>	"Resident at 6000 ft."—Aiken.					6000	
29. <i>Troglodytes ædon parkmani</i>	7000	11000	10000		Plains	10000	
30. <i>Anorthura trog. hyemalis (Ridgw.)</i>							
31. <i>Telmatodytes palustris paludicola</i>	6000	8000	9500		"	8000	
32. <i>Anthus ludovicianus</i>	9500	13000	14000		12000	13000	
33. <i>Mniotilta varia</i>		5500					
34. <i>Helminthophaga virginia</i>	6000	7500	8000		5000	7500	
35. <i>Helminthophaga ruficapilla (Ridgw.)</i>							
36. <i>Helminthophaga celata</i>	6000	9000			6000	9000	
37. <i>Helminthophaga peregrina</i>		5500					
38. <i>Parula americana</i>		5500					
39. <i>Dendræca æstiva</i>	6000	8000			Plains	8000	
40. <i>Dendræca coronata</i>	9000						
41. <i>Dendræca auduboni</i>	7500	11000	9500		7500	11000	
42. <i>Dendræca maculosa</i>	5000						
43. <i>Dendræca cerulea</i>	5000						
44. <i>Dendræca striata</i>	6000	11000				11000	
45. <i>Dendræca gracia</i>		7000			6000	7000	
46. <i>Dendræca nigrescens</i>	9500	7800			5500		
47. <i>Dendræca townsendi</i>	500	8000	10000		5500	8000	
48. <i>Sirus auricapillus</i>		8000					
49. <i>Sirus naevius</i>		8000					
50. <i>Geothlypis macgillivrayi</i>	6000	9000	9500		5000	9000	
51. <i>Geothlypis trichas</i>	6000	6000			Plains	6000	
52. <i>Icteria virens longicauda</i>	6000	6500			"	6500	
53. <i>Wilsonia pusilla</i>	9500	12000	11000		6000	12000	
54. <i>Setophaga ruticilla</i>	6000	8000			Plains	8000	
55. <i>Vireosylva gilva swainsoni</i>	6000	10000	7000		5000	10000	
56. <i>Lanivireo solitarius plumbeus</i>	6000	9000	7500		5000	9000	
57. <i>Lanius borealis</i>	6-10000		12500	*-9500		12000?	
58. <i>Lanius ludovicianus excubitoroides</i>	9500		9500		Plains	9500?	
59. <i>Ampelis garrulus</i>				8000			
60. <i>Ampelis cedrorum</i>				5500		9000	
61. <i>Petrochelidon lunifrons</i>	6000	11000	9500		"	10000	
62. <i>Hirundo erythrogaster</i>	7000	11000			"	10000	
63. <i>Tachycineta bicolor</i>	8000	11000			"	10000	
64. <i>Tachycineta thalassina</i>	7000	11000	9500		5000	10500	
65. <i>Cotile riparia</i>		6000			Plains	6000	
66. <i>Stelgidopteryx serripennis</i>	6000	7000			"	7000	
67. <i>Progne subis</i>		8000			6000	8000	
68. <i>Pyrranga ludoviciana</i>	6000	9000	10000		6000	9000	
69. <i>Pyrranga æstiva cooperi</i>	5000						
70. <i>Hesperiphona vespertina</i>	5000	8000					
71. <i>Pinicola enucleator</i>	10000	11500	10000	*-10000	10000	11500	

\* Plains.

## Upper Limit of range in— Breeds—

	Spring	Summer	Autumn	Winter	from	to
72. <i>Carpodacus cassini</i>	6000	10000	9000	*-7000	7000	10000
73. <i>Carpodacus frontalis</i>		8000		5000	4000	8000
74. <i>Loxia curvirostra americana</i>	6000	8000		Plains	5000	8000
75. <i>Loxia leucoptera</i>				10000		
76. <i>Leucosticte tephrocotis</i>				6000		
77. <i>Leucosticte tephrocotis littoralis</i>				5-5000		
78. <i>Leucosticte atrata</i>				5000		
79. <i>Leucosticte australis</i>	12000	13500	13000	6-10000	12000	13500
80. <i>Ergiothus linaria</i>	7-10000			*-10000		
81. <i>Astragalinus tristis</i>	6000	10000	5000		Plains	9000
82. <i>Astragalinus psaltria</i>	5000	9500	9000			9500
83. <i>Chrysomitris pinus</i>	6-10000	11500	10000	*-10000	7000	11500
84. <i>Plectrophanes nivalis (Ridgway)</i>						
85. <i>Centropheanes lapponicus</i>			7500	5000		
86. <i>Centropheanes ornatus</i>	5000			5000		
87. <i>Rhynchophanes macconni</i>	6000			5000		
88. <i>Centronyx bairdi</i>	5000	8000	7000		Plains?	
89. <i>Passerculus sandwichensis savanna</i>	5000	5000				5000
90. <i>Passerculus sandwichensis alaudinus</i>	8000	12000			Plains	12000?
91. <i>Poœcetes gramineus confinis</i>	4-10000	12000	12500		"	12000
92. <i>Coturniculus passerinus perpallidus</i>		6000			"	6000
93. <i>Chondestes grammacus strigatus</i>	6-9000	10000	9000		"	10000
94. <i>Zonotrichia leucophrys</i>	6-10000	12500	10000	6000?	8000	12500
95. <i>Zonotrichia gambeli intermedia</i>	6000					
96. <i>Spizella montana</i>	9500				9000	
97. <i>Spizella domestica arizonæ</i>	6000	9000	9000		5000	9000
98. <i>Spizella pallida</i>	6300	6000			Plains	6000
99. <i>Spizella breweri</i>	6-9000	8000			"	8000
100. <i>Junco akeni</i>	5-10000		9000	*-8000		
101. <i>Junco hiemalis</i>	8000			*-7000		
102. <i>Junco oregonus</i>	6000		11500	*-6000		
103. <i>Junco annectens</i>	6-10000		10000	5000		
104. <i>Junco caniceps</i>	6-10000	12000	9000	5000	7500	12000
105. <i>Amphispiza belli (Ridgway)</i>		6500				6500
106. <i>Amphispiza belli nevadensis</i>		7000				7000
107. <i>Melospiza fasciata fallax</i>	6000	8000		5000	5000	8000
108. <i>Melospiza lincolni</i>	6500	11500	9000		5000	11500
109. <i>Passerella iliaca schistacea (Ridg.)</i>		7000				7000
110. <i>Pipilo maculatus arcticus megalonyx</i>	9500	9000	8000	5000	5000	9000
111. <i>Pipilo chlorurus</i>	7500	11500	9000		5000	11500
112. <i>Pipilo fuscus mesoleucus</i>				5000		
113. <i>Pipilo aberti</i>		8000				8000?
114. <i>Zamelodia melanocephala</i>	6000	8000	8000		Plains	8000
115. <i>Guiraca cerulea</i>		5500			"	5500
116. <i>Passerina cyanea (Ridgway)</i>						
117. <i>Passerina amœna</i>	6000	7000	7000		"	7000
118. <i>Cardinalis virginianus</i>				5000		
119. <i>Spiza americana</i>		6000	6000		"	6000
120. <i>Calamospiza bicolor</i>	6-9200	8000	8000		"	8000
121. <i>Dolichonyx oryzivorus</i>	6000					
122. <i>Molothrus ater</i>	6000	8000			"	8000
123. <i>Xanthocephalus icterocephalus</i>	6000	9500	9500		"	7500
124. <i>Agelaius phœniceus</i>	6000	9000	7000		"	8000
125. <i>Sturnella neglecta</i>	6000	9200	10000		"	8000
126. <i>Icterus spurius</i>		5000			"	6000?
127. <i>Icterus galbula</i>		5000			"	6000?
128. <i>Icterus bullocki</i>	6000	10000			5000	10000
129. <i>Scolecophagus cyanocephalus</i>	6000	10000	13000	4-9000	Plains	10000
130. <i>Quiscalus purpureus œneus</i>		5000				5000
131. <i>Corvus corax carnivorus</i>		13000	14000	5-10000		
132. <i>Corvus cyptoleucus</i>		6000		5000	4000	6000
133. <i>Corvus frugivorus</i>		7000	7000			7000
134. <i>Picicorvus columbianus</i>	9000	11500	13000	7-9000	6500?	11500
135. <i>Gymnocitta cyanocephala</i>	5000	8000	6-13500	6000	5000	8000
136. <i>Pica rustica hudsonica</i>	9000	11000	10000	3-9000	4000	10000
137. <i>Cyanocitta stelleri macrolopha</i>	6-10000	11500	13000	5-10000	5000	11500
138. <i>Aphelocoma woodhousei</i>	5000	8000	9500	5000	5000	8000
139. <i>Perisoreus canadensis capitalis</i>	†	†	†	†	8000	11500
140. <i>Eremophila alpestris leucolama</i>	5-10000	13000	13000	5-9000		13000

\* Plains.

† Keeps near timber-line the year round.

## Upper Limit of range in — Breeds—

	Spring	Summer	Autumn	Winter	from	to
141. Eremophila alpestris chrysolæma		7000			Plains	7000
142. Tyrannus carolinensis	7500	6000			"	6000
143. Tyrannus verticalis	6000	7000			"	7000
144. Tyrannus vociferans	6000	7000			"	7000
145. Myiarchus cinerascens		7000			4000	7000
140. Sayornis sayi	6000	8000			Plains	8000
147. Contopus borealis	6000	12000	10000		7000	12000
148. Contopus richardsoni	6000	11500	10000		Plains	11000
149. Empidonax difficilis	6000	10000	10000		"	10000
150. Empidonax pusillus		8000	8000		"	8000
151. Empidonax minimus	6000				"	
152. Empidonax hammondi	6000	8000			"	8000
153. Empidonax obscurus	6000	10500			7500	10500
154. Trochilus alexandri (Ridgway)		6000				6000
155. Selasphorus platycercus	5000	13000	9000		4000	11000
150. Selasphorus rufus		15000			9500	10500
157. Cypselus saxatilis	6000	13500			6000	12500
158. Cypseloides niger borealis		14000	14000		10000	12000
159. Phalaenoptila nuttalli	6000	8000			Plains	8000
160. Chordeiles popetue henryi	5000	12000	9500		"	11000?
161. Picus villosus harrisi	6-10000	11000	10000	5-10000	4500	11500
162. Picus pubescens gairdneri	6-10000	12000	10000	5-10000	4500	11500
163. Picoides tridactylis dorsalis	10000	12000	10000	10000	8000	12000
164. Sphyrapicus varius (Ridgway)						
165. Sphyrapicus varius nuchalis	8000	12000	9500		4000	12000
166. Sphyrapicus thyroideus	6000	10000	7000		5000	10000
167. Centurus carolinus (Ridgway)						
168. Melanerpes erythrocephalus	6000	11000	5000		Plains	10000
169. Melanerpes torquatus	6000	8000	7000	4-7000	5000	8000
170. Colaptes auratus mexicanus	6-10000	12000	12000	3-5000	Plains	12000
171. Ceryle alcyon	9500	9500			"	9500
172. Geococcyx californianus		5000			5000	5000
173. Coccyzus americanus		8000			4000	8000
174. Conurus carolinensis	†	†	†	†		
175. Asio americanus	6000	11000	10000	*-10000	Plains	11000
176. Scops asio maxwellæ		6000	5000	5000	4000	6000
177. Scops flammeolus		8000				8000
178. Bubo virginianus arcticus	11000	11500	13000	*-11000	4000	11500
179. Speotyto cucularia hypogæa	†	†	†	†	Plains	9000
180. Hierofalco mexicanus polyagrus	6000	10000	10000		"	10000
181. Falco peregrinus nævus		10000			"	10000
182. Æsalon columbarius		9500			"	10000
183. Æsalon richardsoni	6000	11000			"	
184. Tinnunculus sparverius	6-10000	11500	13000		"	11500
185. Pandion haliaëtus carolinensis		9000	10500		"	9000
186. Circus hudsonius	6000	10000	13500		"	10000
187. Accipiter cooperi	6000	9000			"	9000
188. Accipiter fuscus	9500	9000			"	9000
189. Astur atricapillus striatulus	9500	10000		9500	"	10000
190. Buteo borealis calurus	11000	12000	13500	*-10000	"	12000
191. Buteo cooperi (Ridgway)						
192. Buteo swainsoni	6-10000	10000	13000		"	11500
193. Archibuteo lagopus sancti-johannis				6000		
194. Archibuteo ferrugineus	6000			6000		10000?
195. Aquila chrysaëtus canadensis	6-10000	12000	14000	*-11000	6000	12500
196. Haliaëtus leucocephalus	8000					
197. Cathartes aura	6000	10000	11000		Plains	8000
198. Columba fasciata	7000	8000	8000		5000	8000
199. Zenaidura carolinensis	6000	11000	12000		Plains	10000
200. Melopelia leucopetra		11500				
201. Meleagris gallopavo americana		7000				7000
202. Canace obscura	10000	11500	12500	7-10000	6000	11500
203. Bonasa umbella umbelloides		7000				7000
204. Lagopus leucurus	12000	13500	12000	8-12000	11500	13500
205. Cupidonia cupido	5000	5000	5000	*	Plains	5000
206. Pedicætes phasianellus columbianus	7000	7000	7000	*-7000	"	7000
207. Centrocercus urophasianus		9500		*-7000	"	9500
208. Ardea herodias		5000				5000
209. Garzetta candidissima	§	§	§	§		

\* Plains.

† See B. N. O. C., Vol. II, No. 2, p. 50.

‡ Resident and breeds up to 9000 feet.

§ See American Naturalist, Vol. X, p. 430.

## Upper limit of range in— Breeds—

	Spring	Summer	Autumn	Winter	from	to
210. Nyctherodius violaceus (Ridgway)					Plains	7000
211. Botaurus lentiginosus	5000	7000				
212. Tantalus loculator (Ridgway)		7000				7000?
213. Plegadis guarauna		7000				
214. Charadrius dominicus (Ridgway)					"	10500
215. Oxyechus vociferus	9000	10500			"	8000
216. Podasocys montana	6000	8000	5000			
217. Gallinago media wilsoni	10000	10000		5000	6000	10000
218. Macroramphus griseus	6000	5000				5000?
219. Actodromas maculata			10500			
220. Actodromas bairdi		7000	13000			7000?
221. Actodromas minutella		7000				7000?
222. Pelidna alpina americana (Ridgway)						
223. Ereunetes pusillus	7000		7000			7000?
224. Limosa fedoa			7500		Pl. ins	
225. Totanus melanoleucus		7000				7000?
226. Totanus flavipes		7000				7000?
227. Rhyacophilus solitarius	6000	10000			5000	10000
228. Symphemia semipalmata	6000	7000				7000
229. Bartramia longicauda	6000	6000			Plains	6000
230. Tringoides macularius	6000	13000	9000		"	11000
231. Numenius longirostris		5000			"	5000
232. L. bipes hyperboreus	9500	8000		5000		
233. Steganopus wilsoni (Ridgway)		6000			"	6000
234. Recurvirostra americana	5000	8000			"	8000
235. Himantopus mexicanus	5000	8000			"	8000
236. Rallus virginianus		5000				5000?
237. Porzana carolina (Ridgway)		7000				7000
238. Gallinula galeata (Allen & Brewster)	6000					
239. Fulica americana		8000			"	8000
240. Grus americana (Ridgway)						
241. Grus canadensis		7500	14000		5000	7500
242. Chen hyperboreus			5000	7500		
243. Bernicla canadensis	10000	10000				10000
244. Bernicla canadensis hutchinsi				5000		
245. Anas boschas	6000		10500	*-9500	5000	9000
246. Anas obscura (Ridgway)		8000				
247. Chaulelasmus streperus		8000	10000		Plains	8000
248. Dafila acuta		6000		5000		6000
249. Mareca americana		8000	8000		"	8000
250. Spatula clypeata	6000	8000			"	8000
251. Querquedula discors	10000	8000	10000		"	8000
252. Querquedula cyanoptera	6000	8000	10000		5000	8000
253. Nettion carolinensis	10000	8000	10000		Plains	8000
254. Aix sponsa		8000				8000
255. Fulix marila			9000			
256. Fulix affinis			9000			
257. Fulix collaris			6000			
258. Aethya vallisneria				5000		
259. Aethya americana (Ridgway)						
260. Clangula islandica		8000				8000
261. Clangula glaucium americana			9000			
262. Clangula albeola			6000			
263. Histrionicus minutus		10000	10000		7000	10000
264. Edemia americana (Ridgway)						
265. Erisimatura rubida		10000	11000		7000	10000
266. Mergus merganser americanus		11500				
267. Lophodytes cucullatus (Ridgway)						
268. Pelecanus erythrorhynchus (Ridg.)		4000				4000
269. Larus delawarensis	6000	6000	9500			6000
270. Xema sabinei (Ridgway)						
271. Sterna forsteri (Aiken)	6000					6000
272. Hydrochelidon lari. surinamensis				5000		
273. Stercorarius parasiticus (Ridgway)						
274. Podiceps holboelli			10000			
275. Dytes auritus californicus	7000	8000				8000
276. Podilymbus podiceps (Ridgway)						
277. Colymbus torquatus (Ridgway)						

\* Plains.